



Government Owned Equipment for Liquid metal Systems

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Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company,
for the United States Department of Energy under contract DE-AC04-94AL85000.



Export Control: GTDA General Technical Data No Export Control



Outline

1. Sources of Liquid Metal Equipment
2. Example Equipment that Sandia Has Requested from FFTF
3. Examples of Other Equipment Available
4. The closed loop system at FFTF



Sources of Liquid Metal Equipment

- 1) FFTF -The Fast Flux Test Facility, the US Department of Energy's thermal nuclear test reactor, is located north of Richland, Washington at Hanford.
- 2) EBR II –Experimental Breeder Reactor #2 at INEEL, located approximately thirty-five miles west of Idaho Falls along U.S. 20. Idaho National Engineering and Environmental Laboratory.
(Shut down 1994)



Examples of Equipment that Sandia Has Requested from FFTF

Property Description	Original Cost
1. Valve, Isolation, 1 inch, 304SS	\$6359
2. Valve, Isolation, 1 inch, 316SS	\$5422
3. Valve, Flow Control, 1 inch, 316SS	\$5488
4. Valve, Flow Control, 1 inch, 316SS	\$4320
5. Valve, Flow Control, ¼ inch, 304SS	\$4320
6. Valve, Isolation, 4 inch, 304SS	\$20,424
7. Electromagnetic Pump, 1 inch, L30-4	\$100,000
8. Electromagnetic Pump, 2 inch, L-100-6	\$160,000



Example Equipment that Sandia Has Requested

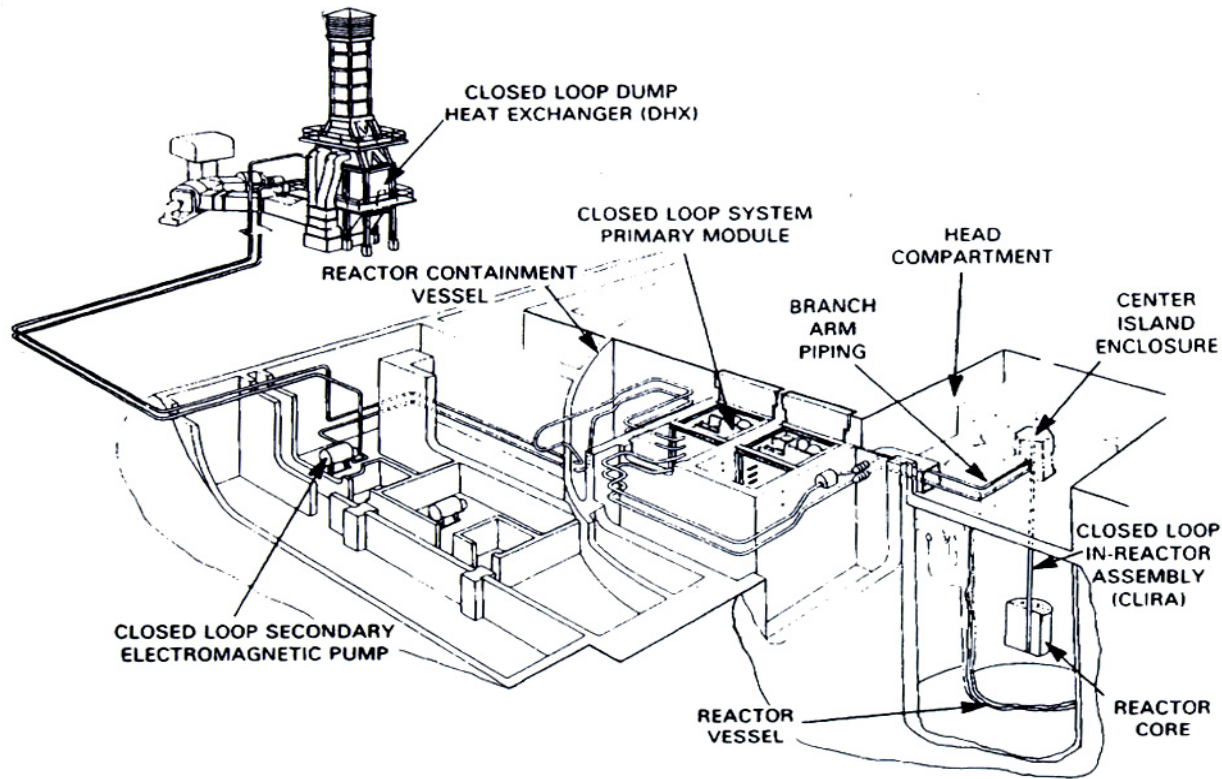
Property Description	Original Cost
9. Flow Meter, Magnetic	\$45,000
10. Electromagnetic, 2 inch, NaK, no heater	\$150,000



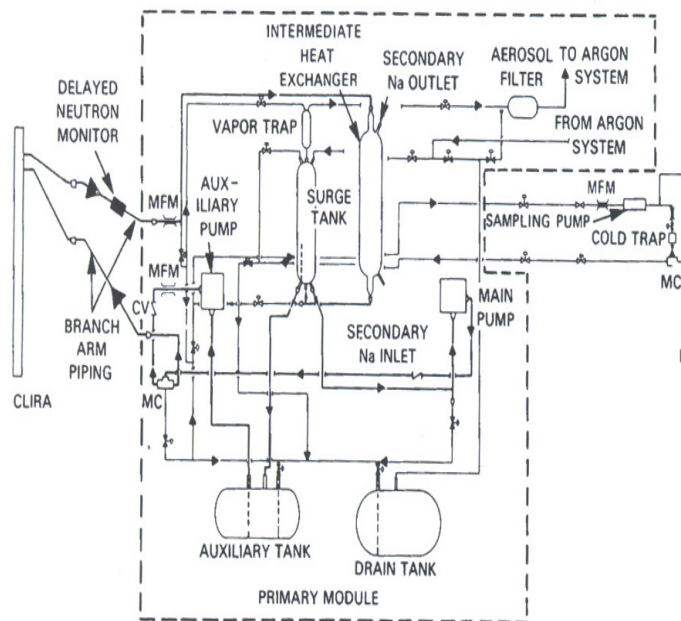
Examples of Other Equipment Available

1. Electromagnetic Pump, 6500 gpm, 14 inch pipe from EBR II
2. Electromagnetic Pump, 60 gpm, 2 “ pipe, EBR II
3. Electromagnetic Pump, 100 gpm, 2 “ pipe, EBR II
4. Electromagnetic Pump, 30 gpm, 1/2 “ pipe, EBR II, radioactive
5. Closed Loop System from FFTF

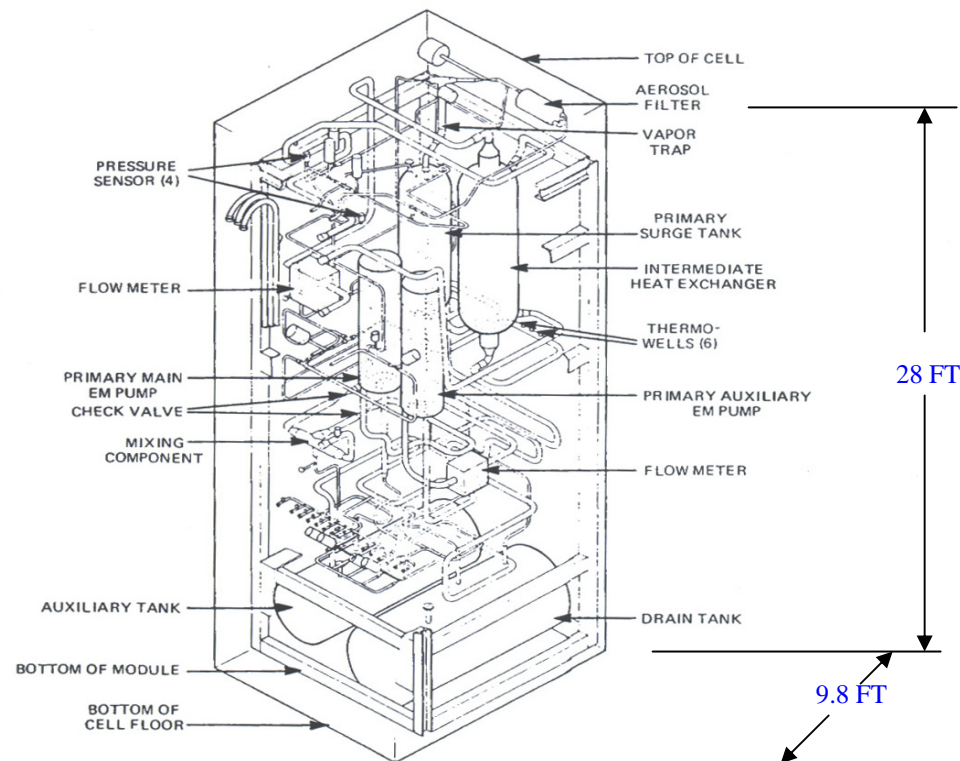
Closed Loop System at FFTF



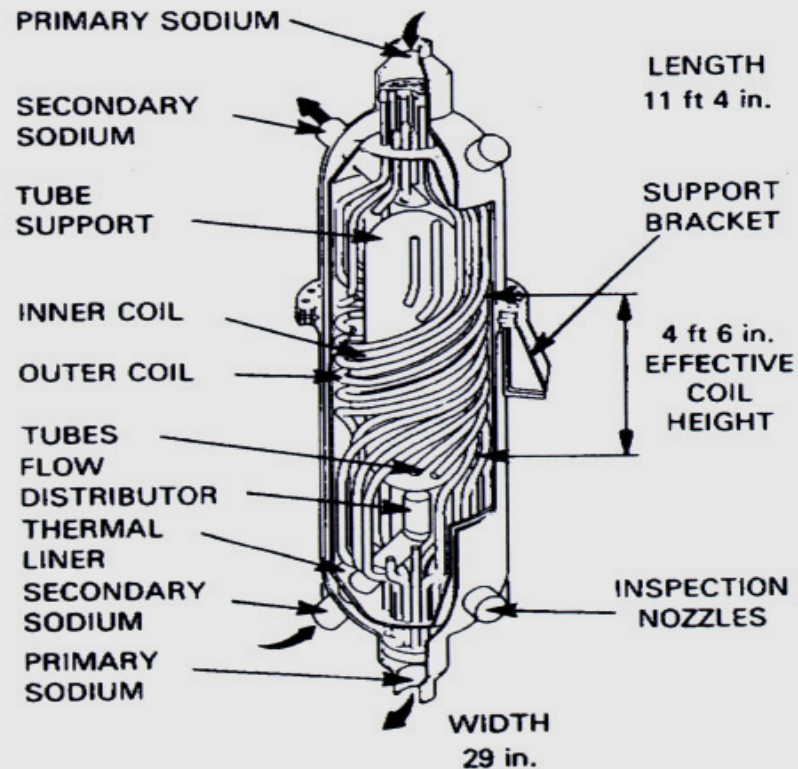
Closed Loop System Schematic.



CLS Primary Cooling System Schematic.

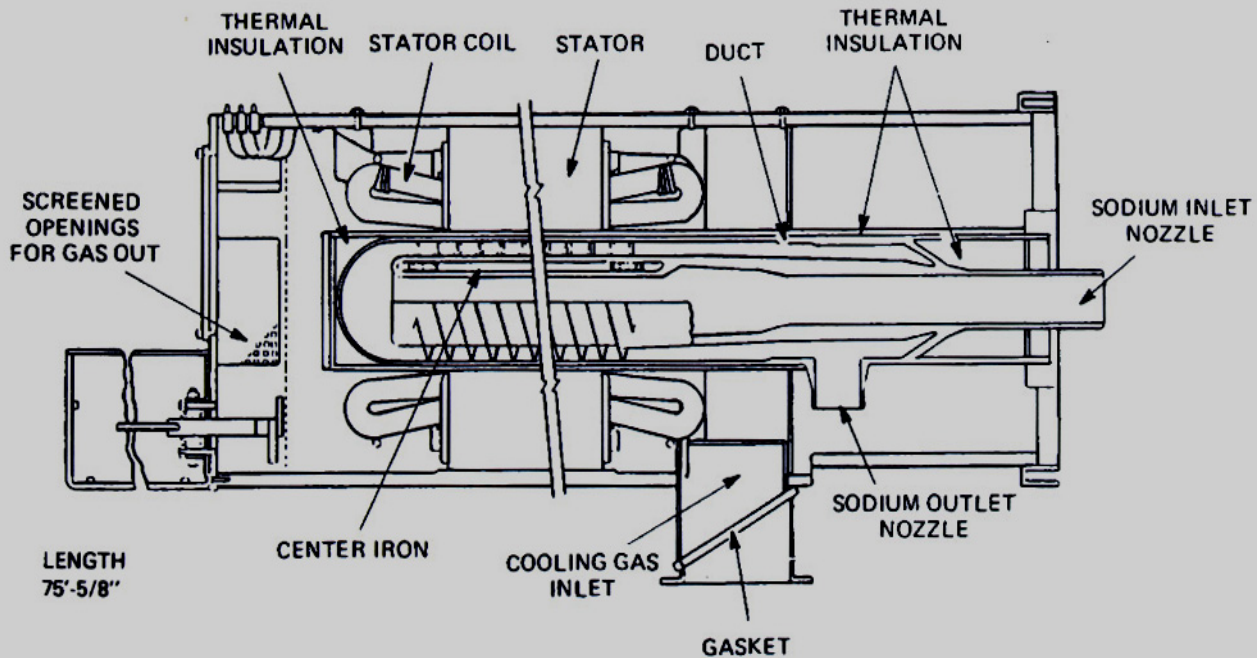


Closed Loop Primary Module Schematic.




- HEAT TRANSFER AREA 116 ft²
- 17 HELICAL TUBES
- THERMAL DUTY 2.3 MW

CLS Intermediate Heat Exchanger.



CLS Primary Pump and Secondary Pump.

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CLIRA OPERATING CONDITIONS	
Flow	1.14×10^4 to 1.31×10^5 lb/hr
Coolant Temperature	760°C (1400°F) Max*
Pressure Drop Test Section	100 lb/in. ²
Test Section Heat Removal	2 MW
Test Section Maximum OD	2.75 in.
Test Section Length	36 in.
Test ΔT	400°F Max
Test Train Length	12 ft
Neutron Flux	7×10^{15} n/cm ² -s

42 gpm or 9.66 m³/hr

488 gpm or 110.95 m³/hr

of Lithium

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Questions?

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